

AN EXTENDED RELEASE POTASSIUM PERSULFATE ISCO REAGENT

KLOZUR® KP is an extended release in situ chemical oxidation (ISCO) reagent comprised of environmental grade potassium persulfate. When properly dosed, the limited solubility of potassium persulfate results in the oxidant being released into groundwater over an extended period of time providing an ideal sustained concentration of persulfate in the subsurface. KLOZUR® KP can be utilized for a number of applications not traditionally thought of for chemical oxidation. These are applications that would benefit from KLOZUR® KP's solubility limited extended release including permeable reactive barriers (PRBs), treatment of lower permeable soils and contaminated groundwater plumes.

KLOZUR® persulfate can be activated using Evonik's patented technologies to form the powerful oxidative ($\text{SO}_4^{\cdot-}$, OH^{\cdot}) and reductive radicals ($\text{O}_2^{\cdot-}$) that aggressively treat targeted contaminants. With proper activation, KLOZUR® KP provides a powerful multi-radical attack for the effective destruction of recalcitrant compounds including chlorinated ethenes (TCE, PCE, DCE and vinyl chloride), chlorinated ethanes

(TCA and DCA), chlorinated methanes (carbon tetrachloride), BTEX, MTBE, polyaromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPHs, GRO, DRO), 1,4-dioxane and pesticides. KLOZUR® KP's unique solubility limited extended release make it best suited for treating aqueous phase contaminants such as MTBE, vinyl chloride, BTEX, 1,4-dioxane, and many other compounds that are primarily in the aqueous phase or low permeable material.

KEY BENEFITS**LIMITED SOLUBILITY APPLICATIONS**

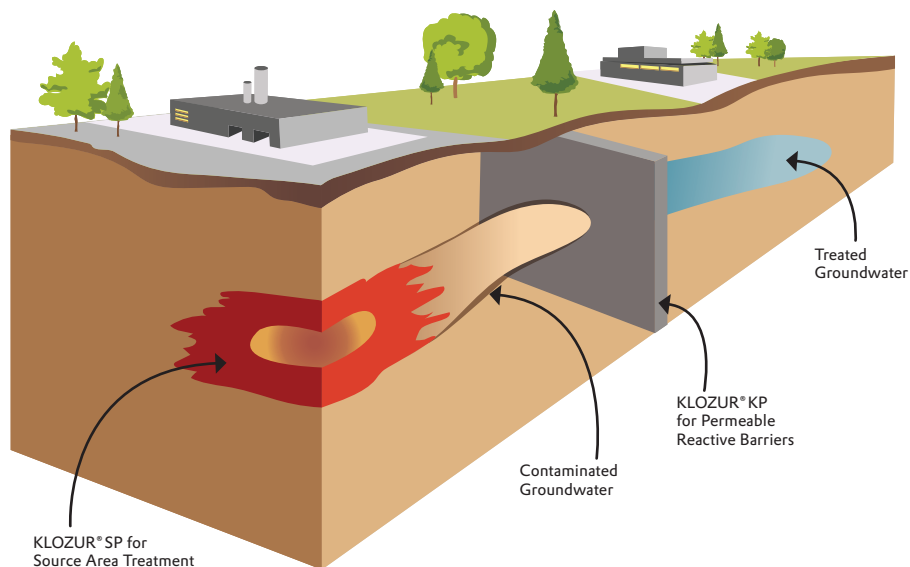
PRBs and low level treatment

EFFECTIVELY TARGET AQUEOUS PHASE CONTAMINANTS

MTBE, 1,4-Dioxane, others

ACTIVATION METHODS

Powerful multi-radical attack



KEY BENEFITS

The release of KLOZUR® KP will be based on its solubility at given temperature. As such, an excess supply of KLOZUR® KP will dissolve and maintain aqueous phase persulfate concentrations up to those theoretical limits as groundwater flows past until all of the KLOZUR® KP is dissolved. This steady release can allow KLOZUR® KP to persist for extended periods of time compared to more soluble oxidants and is well suited toward applications such as permeable reactive barriers.

With a solubility limit of up to 6 wt% (25 °C), KLOZUR® can be applied as a solid or as part of a slurry mixture. Due to its low solubility KLOZUR® KP will have an extended lifetime in the subsurface compared to weeks to months common with purely aqueous phase persulfate. KLOZUR® KP is safe to handle with Evonik's recommended use guidelines and does not generate heat or gas.

SOLUBILITY OF KLOZUR KP

0 °C	17 g/L
10 °C	29 g/L
20 °C	47 g/L

THE SOUND SCIENCE OF KLOZUR® ACTIVATED PERSULFATE

KLOZUR® activated persulfate has a long history of documented success. Site and laboratory data prove successful treatment of some of the most recalcitrant compounds, such as chlorinated ethanes, and emerging contaminants, such as 1,4-dioxane.

APPLICATIONS METHODS

- Physical emplacement or construction
- Soil blending
- Hydraulic slurry injection
- Pneumatic solid phase injection

For more information and detailed case studies, please visit our website.

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